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showed significantly higher values of resistance/height (R/H; $p < 0.01$) and reactance/height (X/H; $p < 0.01$), and a lower phase angle ($p < 0.01$). Moreover we show a significant correlation between appendicular mass and resistance/height ($r = +0.151$; $p < 0.0001$) and reactance/height ($r = +0.047$; $p = 0.04$). GDF-15, Activin A and IL-1 were not correlated with muscle wasting.

Conclusions: BIVA detected muscle-mass variations in patients with muscle wasting. These procedures are promising tools for screening for muscle wasting in routine practice. Patients with HF showed reduced exercise capacity and reduced quality of life and both are correlated with each other. Moreover we have shown that patients with cachexia showed higher GDF-15 and Interleukin-1 levels.

5-04

Acute effects of essential amino acid gel-based and whey protein supplements on appetite and energy intake in older women

Theocharis Ispoglou, Matthew Lees, Paul Harlow, Lauren Duckworth, Karen Hind, Matthew Butteworth
Leeds Beckett University, Carnegie School of Sport, Leeds, United Kingdom

Introduction: Anorexia and the satiating effects of dietary protein are partly responsible for deficiencies in protein (PI) and energy intakes (EI), which are contributing factors to age-related sarcopenia. We have demonstrated that essential amino acids (EAA) supplements facilitate an increase in PI and EI of older women. However, it is not known whether supplementation with different forms of protein supplements providing equivalent amounts of EAA can be as equally effective at increasing EI. We therefore investigated the effect of supplements matched in EAA content (7.5 g) on EI and appetite.

Methods: Ten women aged 69.2 ± 2.7 years, completed three trials in a randomized, crossover design. Composite appetite scores, peptide YY, and insulin responses to a 200 ml whey protein (WP) isolate (275 kJ), a 50 ml EAA gel (478 kJ) or a control (CON) were investigated over one hour, followed by an ad libitum breakfast.

Results: EI at breakfast (CON 1957 ± 713 , WP 1413 ± 623 , EAA 1963 ± 611 kJ) was higher in the CON and EAA than the WP (both $P = 0.006$). After accounting for supplement energy content, EI in the EAA was higher than the CON ($P = 0.0006$) and WP ($P = 0.0008$). Time-averaged area under the curve for composite appetite scores (CON 74 ± 20 , WP 50 ± 22 , EAA 60 ± 16 mm) was higher in CON than WP ($P = 0.015$). Time-averaged area under the curve for peptide tyrosine tyrosine (CON 87 ± 13 , WP 119 ± 27 , EAA 97 ± 22 pg-mL-1) was higher in WP than CON ($P = 0.009$) and EAA ($P = 0.012$).

Conclusions: Supplementation with WP facilitated an increase in PI, whereas supplementation with an EAA gel facilitated an increase in both PI and EI, therefore may be potential means for addressing nutritional age-related sarcopenia.

5-05

DPA shows comparable cellular chemotherapy sensitizing effect as EPA upon cellular incorporation

Francina J. Dijk¹, Bram Dorresteyn¹, Klaske van Norren², Marion Jourdan¹, Ardy van Helvoort¹, Miriam van Dijk¹

¹Danone Nutricia Research, Nutricia Advanced Medical Nutrition, Utrecht, The Netherlands, ²Nutrition and Pharmacology, Wageningen University, Wageningen, The Netherlands

Introduction: Dietary supplementation with ω -3-polyunsaturated fatty acids (PUFAs) has shown beneficial effects on cancer and treatment outcomes. Compared to eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), the role of ω -3-PUFA docosapentaenoic acid (DPA) has been studied less. We hypothesize that DPA could have similar effects as EPA and DHA in cancer and during its treatment.

Methods: C26-adenocarcinoma cells were pre-treated (4 days) with EPA, DHA or DPA (50 μ M) and treated with doxorubicin or cisplatin. Cellular PUFA incorporation and chemo-sensitivity was measured by cell gas-chromatography, cell viability (WST) and apoptosis (caspase-3/7). Subsequently, incorporation of PUFAs in tumour and muscle tissue was studied in a C26-tumour-bearing (TB) mouse model after supplementation with EPA-containing diet supplements (fish-oil, pure-EPA or tuna-oil). In healthy volunteers, PUFA incorporation was measured in plasma, RBC and WBC at five timepoints following a nutritional supplement intervention containing fish-oil for 7 days (Faber et al 2011).

Results: Both EPA and DPA showed similar chemotherapy-enhancing properties by increasing chemotherapy sensitivity in C26-adenocarcinoma cells. DPA incorporation was significantly increased in cells treated with EPA and DPA ($P < 0.0001$) when compared to control treatment. In TB-mice, supplementation with fish-oil and pure-EPA, both high in EPA content and low in DPA, resulted in a twice as high incorporation of DPA in tumour and muscle tissue when compared to EPA. In line with the preclinical results, healthy volunteers showed a significant increase in EPA and DPA in WBC and plasma ($P < 0.001$) following supplementation with a fish-oil containing nutritional intervention.

Conclusions: Supplementation with EPA or EPA-containing supplements leads to increased cellular EPA and DPA. High DPA incorporation is mainly driven by the elongation of incorporated EPA. Both EPA and DPA supplementation showed